



PERFORMANCE  
DRIVEN DESIGN.

LHBcorp.com

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## **MINNESOTA CAPITAL QUADRIGA MONUMENT CHARIOTEER SUPPORT ASSESSMENT AND RECOMMENDATIONS REVISION 1**

### **INTRODUCTION**

Concerns of corrosion at the Minnesota State Capital quadriga monument prompted the investigation and analysis of the securement of the charioteer statue. LHB assisted with the field measuring and assessment during the recent lowering of the statue from the State Capital roof. See Photo 1 of Appendix A for an overall view of the Quadriga.

### **SUMMARY**

The statue was originally supported on the chariot top which was comprised of a 1/8" thick mild steel top plate reinforced with L2x2x1/4" stiffeners. The statue is secured to the chariot top by five straps, the single pole and two bars laterally to horses. Each strap was bolted to the chariot top with two 1/4" diameter bronze bolts. The mild steel chariot top has extensive corrosion around select statue bolt holes. See Photo 2 for an underside view of the chariot top and auxiliary steel plates added at the bolt locations. The exposed ends of the statue hold down straps have signs of corrosion. See photos 4, 5 and 6 for views of the statue hold down straps and current bolts.

Currently the chariot top is anchored to the chariot axel and building roof with steel straps. See photo 2 for a view of the axel tie downs and photo 3 for a view of the building tie down straps.

LHB did analyze the chariot top and statue anchor bolts per current wind loading code.

### **RECOMMENDATIONS**

LHB recommends replacing the chariot top plate with 316 grade stainless steel plate, 1/8" thick minimum. The original underside L2x2x1/4" reinforcing angles can be reused to support the new stainless steel top plate. Connect the stiffeners to the new top plate using the existing bolt

## APPENDIX A – PHOTOGRAPHS



Photo 1: Overall View of the Quadriga



Photo 2: Underside View of Chariot Top





Photo 3: Chariot Rear Tie Down Straps



Photo 4: View of Charioteer Bottom

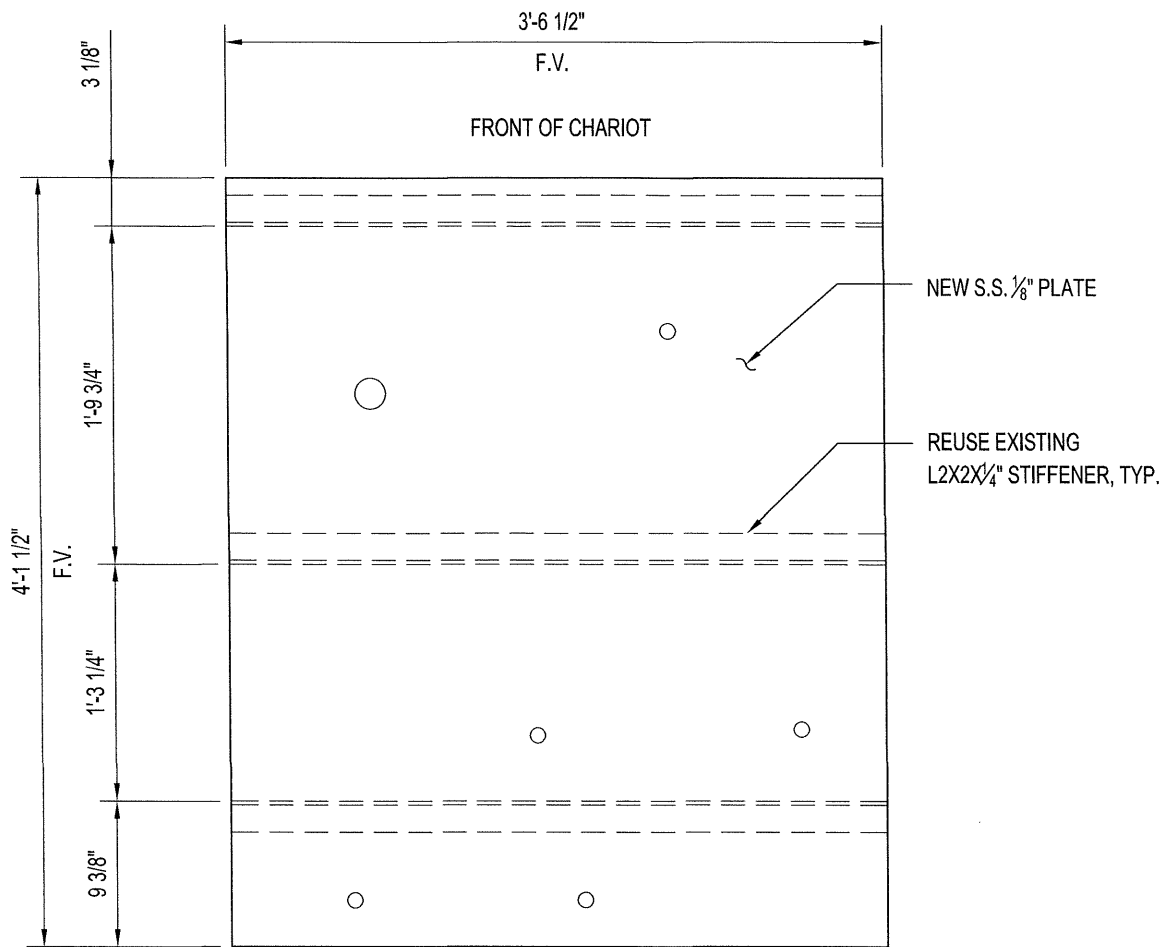




Photo 5: Photo of Leg Hold Down Strap



Photo 6: Photo of Leg Hold Down Strap & Bolts



# 1 CHARIOT TOP PLAN VIEW

1"=1'-0"

## NOTES:

1. USE ASTM A240 S31600 PLATE, 1/8" THICKNESS FOR THE TOP PLATE.



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CLIENT NAME:

JENSEN  
CONSERVATION  
SERVICES, INC

DWG.  
TITLE:

CHARIOT TOP

PROJECT  
NAME:

MINN. QUADRIGA MONUMENT

FILE: ..140488\600 Drawings\SI\S1.01.dwg

DRAWING NO:

DRAWN BY: AMA

CHECKED BY: JJC

PROJ. NO: 140488

**S1.01**